claim 42, this amendment merely complies with a requirement of form expressly set forth by the Examiner in a previous Office action. Furthermore, this amendment of claim 42 does not concern the merits of the present application, does not present any new matter, and does not require any additional search, but instead requires only a cursory review by the Examiner. Additionally, this minor amendment of claim 42 places claim 42 in better form for consideration on appeal, should any appeal be later filed. Again entry of this Amendment After Final under 37 C.F.R. §1.116 is respectfully requested.

Claim Rejections Under the Second Paragraph of 35 U.S.C. §112

In the Office Action, the Examiner rejected claim 42 as allegedly "being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." In support of this rejection, the Examiner stated:

> Claim 42 is confusing, and therefore indefinite in two aspects. First, claim 42 recites 'the improvement of claim 36' whereas claim 36 does not recite any 'improvement.' Secondly, it is confusing what the claim is intending to recite since it recites addition of a product to a composition, but then recites that the added product must become undetectable.

Despite the Examiner's comments, claim 42 is believed to be definite within the meaning of the second paragraph of 35 U.S.C. §112.

Claim 42 reads as follows:

> *42. (Amended) The method of claim 36, the method further comprising mixing the peroxide-containing compound and the mucosa tissue to form a mucosa product, the concentration of the peroxide-containing compound remaining in the mucosa product being undetectable when the concentration of the peroxide-containing compound remaining in the mucosa product is determined using $KMnO_4$ titration.*

Thus, claim 42, as presently worded, no longer contains 'the improvement of claim 36' phrase of concern to the Examiner.

The Examiner's second allegation requires consideration of the basis for claim indefiniteness. The definiteness requirement of the second paragraph of 35 U.S.C. §112 is concerned

with whether one of ordinary skill in the art will reasonably be able to determine if particular subject matter falls within the scope of a particular claim. Conversely, if one of ordinary skill in the art would reasonably be able to determine if particular subject matter falls within the scope of the claim, that claim is definite in accordance with the definiteness requirement of the second paragraph of 35 U.S.C. §112.

Here, one seeking to determine if particular subject matter meets claim 42 would, in addition to considering the details of claim 36, need to determine if the particular subject matter entails "mixing the peroxide-containing compound and the mucosa tissue to form a mucosa product," as claim 42 requires, and then additionally need to determine the concentration of the peroxide-containing compound remaining in the mucosa product. If the concentration of the peroxide-containing compound remaining in the mucosa product, when determined using $KMnO_4$ titration, is not "undetectable" (i.e. is "detectable") or if the particular subject matter does not entail "mixing the peroxide-containing compound and the mucosa tissue to form a mucosa product," as claim 42 requires, then the person knows the particular subject matter falls outside the literal scope of claim 42. If, on the other hand, the concentration of the peroxide-containing compound remaining in the mucosa product, when determined using $KMnO_4$ titration, is "undetectable" and the particular subject matter does entail "mixing the peroxide-containing compound and the mucosa tissue to form a mucosa product," as claim 42 requires, then the person knows the particular subject matter falls within the literal scope of claim 42.

The Examiner's comments about confusion regarding "what the claim is intending to recite" merely reflects the existence of a reaction, when practicing the invention in accordance with claim 42, that reduces the concentration of the peroxide-containing compound remaining in the mucosa product below the detection limit of the $KMnO_4$ titration procedure. Indeed, the definiteness requirement of the second paragraph of 35 U.S.C. §112 does not require that one of ordinary skill in the art understand why a claimed result occurs. Instead, the definiteness requirement of the second paragraph of 35 U.S.C. §112 is merely concerned with whether one of ordinary skill in the art will reasonably be able to determine if his subject matter falls within or outside the scope of a particular claim. As explained in the previous paragraph, there is no reason to believe one of

ordinary skill in the art would be incapable of understanding the requirements of claim 42 and making this determination. Consequently, claim 42 is believed definite in accordance with the second paragraph of 35 U.S.C. §112.

Claim 42 is believed allowable. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 42 under the second paragraph of 35 U.S.C. §112 and that claim 42 be allowed.

Claim Rejections Under 35 U.S.C. §103

In the Office Action, the Examiner rejected claims 21-27 and 36-54 as allegedly being unpatentable over U.S. Patent No. 5,607,840 to Van Gorp et al. (the "Van Gorp patent") in view of U.S. Patent No. 4,438,100 to Balslev et al. (the "Balslev patent") and U.S. Patent No. 4,145,451 to Oles (the "Oles patent"). Nonetheless, despite the Examiner's rejection, the Van Gorp, Balslev, and Oles patents, either separately or in any combination, do not teach, suggest, disclose, or make obvious the invention of the above-identified application, as defined in claims 21-27 and 36-54.

Claims 24, 43, and 44

The Examiner's attention is first drawn to claims 24, 43, and 44 that read as follows:

> *24. The method of claim 21, wherein said preserving agent is hydrogen peroxide, and further including the step of heating said mucosa tissue to a temperature of from about 50-105 °C prior to said mixing step.*
>
> *43. The method of claim 36, the method further comprising:*
> *heating the mucosa tissue to a temperature in the range of about 50-105 °C prior to combining the peroxide-containing compound and the mucosa tissue.*
>
> *44. The method of claim 36, the method further comprising:*
> *heating the mucosa tissue to a temperature in the range of about 65-75 °C prior to combining the peroxide-containing compound and the mucosa tissue.*

Claims 24, 43, and 44 thus each require heating the mucosa tissue prior to combination of the hydrogen peroxide or peroxide-containing compound with the mucosa tissue and thus each require a combination of heating and preservative addition. In the present Office Action, the Examiner relies only on the Van Gorp patent for the disclosure that allegedly includes both preservative addition and heating:

> Note specifically Van Gorp's disclosure of the suitability of a heating step in the preservation methods as recited in applicant's claims 24, 43 and 44.

(Page 3, second complete paragraph, of the present Office Action). However, the heating referred to by the Examiner is a *physical* treatment that is specified in the Van Gorp patent as an alternative to the described chemical treatment:

> When the raw material is transported or stored for a period of time before processing, it is preferably treated by physical **or** chemical means to inhibit bacterial growth. Physical means include temperature elevation into the range between 50 degrees C. and 95 degrees C. Chemical means include the use of a bacteriostat or bacteriocide.

(Column 4, lines 17-22, of the Van Gorp patent). (Emphasis added). Clearly, the Van Gorp patent calls for heating or preservative addition and does not teach, suggest, or disclose that the heating ang preservative addition both occur in some combination. On the other hand, claims 24, 43 and 44, as is clear from reading claims 24, 43, and 44 above, each require *both* heating and preservation agent addition. Furthermore, neither the remainder of the Van Gorp patent, nor the Balslev patent, nor the Oles patent includes any teaching, suggestion, or disclosure that both heating and preservative addition be employed or that the substrate be heated to the temperatures in the range of those specified by claims 23, 43 and 44 prior to adding a chemical preservative.

Claims 23, 43, and 44 are each believed allowable. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 23, 43, and 44 under 35 U.S.C. §103 based upon the Van Gorp, Balslev, and Oles patents and that claims 23, 43, and 44 be allowed.

Claims 48 and 50

The Examiner's attention is next directed to claims 48 and 50 that read as follows:

> *48. The method of claim 46, the method further comprising contacting the hydrolyzed mucosa product with a protein-containing material under conditions effective to hydrolyze at least some protein of the protein-containing material and thereby reduce enzymatic activity of the hydrolyzed mucosa product.*
>
> *50. The method of claim 49, the method further comprising contacting the hydrolyzed mucosa tissue with a protein-containing material under conditions effective to hydrolyze at least some protein of the protein-containing material and thereby reducing enzymatic activity of the hydrolyzed mucosa tissue.*

Claims 48 and 50 thus each require combination of a hydrolyzed protein substance with a protein-containing substance to hydrolyze protein contained in the protein-containing substance, while reducing the enzymatic activity of the hydrolyzed mucosa product. There is nothing whatsoever in the Van Gorp patent, the Balslev patent, or the Oles patent teaching, suggesting, or disclosing combination of a hydrolyzed protein substance with a protein-containing substance to hydrolyze protein contained in the protein-containing substance, while reducing the enzymatic activity of the hydrolyzed mucosa product, as claims 48 and 50 each require. This may explain why the Examiner provided no statements with regard to the Van Gorp patent, the Balslev patent, or the Oles patents in relation to claims 48 and 50.

Claims 48 and 50 are each believed allowable. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 48 and 50 under 35 U.S.C. §103 based upon the Van Gorp, Balslev, and Oles patents and that claims 48 and 50 be allowed.

Claims 21 and 22

The Examiner's attention is next drawn to claim 21 that reads as follows:

> *21. A method for preserving mucosa tissue comprising mixing a quantity of mucosa tissue with a preserving agent selected from the group consisting of hydrogen peroxide and phosphoric acid to yield the preserved mucosa tissue.*

In regard to the Examiner's rejection of claim 21, Applicants presented the following argument in the previous Amendment filed on April 11, 2002:

> Finally, we again consider the language of claim 21. Claim 21 lists options for the preserving agent in a Markush listing. Phosphoric acid is included in the Markush listing of the preserving agent, while acetic acid is not included in the Markush listing of the preserving agent. According to claim 21, mixing the mucosa tissue and preserving agent of the Markush listing yields the "preserved mucosa tissue." However, the Oles patent only discloses joint use of phosphoric acid and organic food acid (such as acetic acid) together as the preserving agent of the Oles process:
>
> > The food compositions of the present invention contain a synergistic combination of acetic acid or other organic food acid and phosphoric acid.
>
> (Col. 2, lines 31-33). Thus, rather than simply substituting phosphoric acid in place of the oxygen-scavenging stabilizer of the Van Gorp process per the Examiner, it would instead be necessary to substitute phosphoric acid and organic food acid (such as acetic acid) together in place of the oxygen-scavenging stabilizer of the Van Gorp process to remain consistent with the teachings of the Oles patent about common use of the phosphoric acid and organic food acid, even though the Oles patent and/or the Van Gorp patent do not actually teach substitution of phosphoric acid and/or organic food acid in place of the oxygen-scavenging stabilizer of the Van Gorp process. Nonetheless, if such a substitution of phosphoric acid and organic food acid were made in place of the oxygen-scavenging stabilizer of the Van Gorp process, the net result would not equal the invention of the above-identified application, as defined in claim 21, since claim 21 requires that the phosphoric acid, rather than a combination of the phosphoric acid and organic acid, be sufficient to transform the "mucosa tissue" into the "preserved mucosa tissue."

In the present Office Action, in response to this prior argument of Applicants, the Examiner stated:

> Applicant further argues that because claim 21 recites only hydrogen peroxide and phosphoric acid in the Markush group listing suitable preservatives, and because Oles uses a combination of phosphoric acid and acetic acid as preservative agents, Oles does not suggest the claimed process. This argument ignores the fact that the process is recited in open 'comprising' language which encompasses the addition of anything to the composition, including the acetic acid

> disclosed in Oles. While the claims clearly require that hydrogen peroxide of phosphoric acid be added to the mucosa, they do not exclude the addition of other ingredients, such as acetic acid. Thus, applicant's argument ignores the actual limitations present in the claims.

This argument of the Examiner misses the point of Applicants' prior argument and does not properly characterize the requirements of claim 21.

Applicants agree that claim 21 employs open comprising language that does not exclude the acetic acid of the Oles patent. Nonetheless, claim 21 does specifically require "**mixing a quantity of mucosa tissue with a preserving agent . . . to yield the preserved mucosa tissue,**" where the preserving agent is **"selected from the group consisting of hydrogen peroxide and phosphoric acid**." Thus, despite the open ended comprising language employed in claim 21, claim 21 still requires that mixing the mucosa tissue and the preserving agent of the Markush listing yields the "preserved mucosa tissue." The open ended comprising language does not modify this particular requirement of claim 21.

Consequently, as previously pointed out to the Examiner in the Amendment filed on April 11, 2002, even if the phosphoric acid and organic food acid combination required by the Oles patent were substituted in place of the oxygen-scavenging stabilizer of the Van Gorp process in accordance with the Examiner's suggestion, the net result would not equal the invention of the above-identified application, as defined in claim 21, since claim 21 requires that the phosphoric acid, rather than a combination of the phosphoric acid and organic acid, be sufficient to transform the "mucosa tissue" into the "preserved mucosa tissue." The Examiner's alleged combination of the Oles patent and the Van Gorp patent simply does not render the invention defined in claim 21 obvious. Related comments apply to claim 22 that depends from claim 21 and specifies that the "preserving agent is phosphoric acid."

Claims 21 and 22 are believed allowable over the Examiner's rejection of claim 21 under 35 U.S.C. §103 based upon the Van Gorp patent and the Oles patents. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 21-22 under

35 U.S.C. §103 based upon the Van Gorp patent and the Oles patent and that claims 21-22 be allowed.

Claims 21-27 and 53-54 (In View of the Van Gorp Patent and the Oles Patent)

We now consider other issues raised by the Examiner's alleged combination of the Van Gorp patent and the Oles patent, in the context of claims 21-27 and 53-54. It is understood that the Examiner's alleged combination of the Van Gorp patent and the Balslev patent is inapplicable to claims 53-54, since the Balslev patent does not teach, suggest, or disclose anything about the phosphoric acid required by claims 53-54.

The Oles patent concerns "food compositions" that "contain a synergistic combination of acetic acid or other organic food acid and phosphoric acid" for purposes of preserving the food compositions against spoilage. (Col. 2, lines 31-33, of the Oles patent). Thus, the preservation technique of the Oles patent relies upon acidification of the food compositions and also relies upon packing the food compositions that include the acid preservative into jars. (Col. 6, lines 1-5, of the Oles patent). The concentration of acetic acid may range from 0.05 to 1.8 weight percent and the concentration of phosphoric acid may range from 0.1 to 1.5 weight percent, based upon the total moisture weight present in the food composition. (Last line of col. 2 to first line of col. 3 of the Oles patent).

Furthermore, the Oles patent is generally directed to food compositions of the dressing condiment type that are added to human foods:

> The dressing products contemplated by the present invention include oil or oilless, pourable or viscous, emulsified or nonemulsified food products commonly used as an adjunct on salads, vegetables, sandwiches, and the like. Included within such classification are products such as mayonnaise, salad dressing, and French dressing, and imitations thereof, for which federal standards have been created, as well as low calorie oilless products, including condiments, and emulsified and nonemulsified oil-containing products for which no federal standards exist.

(Col. 2, lines 40-51, of the Oles patent). Later, the Oles patent reemphasizes the particular focus of the preserved human food compositions: "The present invention is principally directed to compositions of the mayonnaise and salad dressing type." (Col. 4, lines 48-49, of the Oles patent).

The Oles patent also emphasizes that the "synergistic combination of acetic acid or other organic food acid and phosphoric acid" are employed "in the absence of chemical preservatives." (Col. 2, line 8, of the Oles patent). It is important to note that the food compositions of the Oles patent are completed human food products, such as salad dressings and mayonnaise. (Col. 2, lines 40-51, of the Oles patent). Indeed, the food compositions obtained by the Oles process are only minimally further processed - homogenization and/or emulsification - after addition of the "synergistic combination of acetic acid or other organic food acid and phosphoric acid.. (Col. 5, line 9, through col. 6, line 5 of the Oles patent).

On the other hand, the preservative of the Van Gorp patent is added to a raw material - mucosa - at a very early stage in advance of further processing, such as heating, and enzymatic hydrolysis. (Col. 4, line 45, through col. 5, line 9, of the Van Gorp patent). The Van Gorp patent discloses that the hydrolyzed material may then be incorporated in pig feed. (Col. 8, lines 24-47, of the Van Gorp patent). While the Van Gorp patent briefly mentions use of a preservative that is safe for human consumption and use of food grade enzymes, the only food applications actually disclosed by the Van Gorp patent are the above-noted pig feed applications. Furthermore, rather than being incorporated in complete human foods like the salad dressings of the Oles patent, the preservatives of the Van Gorp patent are employed in raw livestock byproducts:

> Typical raw materials envisioned for use in the process are livestock by-products, including gastrointestinal, tracheal or bronchial tissues, or other offal or non-offal tissues. The process water of livestock or meat processing establishments may also serve as a raw material.

(Col. 4, lines 12-16, of the Van Gorp patent). The Van Gorp patent principally focuses on an oxygen-scavenging stabilizer, sodium metabisulfite, as the preserving agent, though the Van Gorp patent also mentions various anti-oxidants (calcium propionate, BHT, and BHA) as examples of the preserving agent. (Col. 4, lines 21-34, of the Van Gorp patent).

According to the Examiner,

> Van Gorp also discloses the preservation of the mucosa starting material using well known preservatives. See col.4, lines 17-34 and 45-50.
>
> . . .

> Van Gorp differs from the claims in that Van Gorp does not use the claimed . . . phosphoric acid as a preservative. However, . . . Oles (see, e.g., abstract) . . . make it clear that . . . phosphoric acid [was a] . . . well known . . . [preservative] in food and/or pharmaceutical applications. Thus, the claimed substitution of well known preservatives for those used in Van Gorp must be considered an obvious substitution of one known equivalent preservative for another. That is, because the artisan of ordinary skill at the time of applicant's invention would have had a reasonable expectation from Oles . . . that phosphoric acid . . . would have functioned equivalently to the preservatives disclosed by Van Gorp, the artisan of ordinary skill would have been motivated to have substituted Oles' phosphoric acid . . . peroxide for the preservatives disclosed by Van Gorp.

This allegation of the Examiner that the Oles phosphoric acid "would have functioned equivalently to the preservatives disclosed by Van Gorp" and therefore "must be considered an obvious substitution of one known equivalent preservative for another" is without support in the Van Gorp patent and the Oles patent and is furthermore without support in the preservative art generally.

The Examiner has provided no evidentiary support for his allegation of equivalence, but instead relies purely on conclusory comments. Indeed, it is well known that most chemical agents have only very specific food preservation actions and functionalities and therefore must be carefully matched to the particular preservation action desired. Jay, James M., Modern Food Microbiology, pages 259-296 (Van Nostrand Reinhold 1986) (attached as Exhibit A to this Amendment After Final). Indeed, some chemical agents are active only against molds while other chemical agents are active only against yeast and still other agents are active only against certain bacteria. Id. Furthermore, most chemical agents require specific conditions of pH, moisture, and/or temperature to function effectively as preservatives. Id..

The details provided throughout the Exhibit A reference demonstrate there is no support whatsoever for the Examiner's allegation that the Oles phosphoric acid "would have functioned equivalently to the preservatives disclosed by Van Gorp" and therefore "must be considered an obvious substitution of one known equivalent preservative for another." Indeed, the mere fact that the Oles patent relies on a synergistic combination of acidifying agents, whereas the Van Gorp patent principally relies on an oxygen-scavenging stabilizer (while also mentioning anti-oxidants) demonstrates the wide difference in operating function between the preservatives of the

Van Gorp patent and the preservatives of the Oles patent. There simply is no reasonable basis for believing that an "artisan of ordinary skill at the time of applicant's invention would have had a reasonable expectation from Oles . . . that phosphoric acid . . . would have functioned equivalently to the preservatives disclosed by Van Gorp" and would therefore "have been motivated to have substituted Oles' phosphoric acid . . . for the preservatives disclosed by Van Gorp," despite the Examiner's conclusory allegation to the contrary.

As to the differences between how the acidifying agents are incorporated in the Oles process versus how the oxygen scavengers or anti-oxidants are incorporated in the Van Gorp process, the Examiner alleged:

> Applicant further argues that one would not have been motivated to have substituted Ole's phosphoric acid for the preservatives disclosed in Van Gorp because the two preservatives are used in allegedly very different manners, to preserve very different materials, which make the substitution alleged in the rejection of record 'obvious to try' at best.
>
> However, obviousness does not require absolute predictability. Rather, the prior art need only provide the artisan of ordinary skill a reasonable expectation of success. *See* MPEP 2143.02. From Oles' disclosure of the suitability of phosphoric acid as a preservative in food applications, the artisan of ordinary skill clearly would have reasonably expected it to be useful in Van Gorp's process.

This allegation of the Examiner that "the artisan of ordinary skill clearly would have reasonably expected it to be useful in Van Gorp's process," based on "the Oles' disclosure of the suitability of phosphoric acid as a preservative in food applications" disregards the differences highlighted in the discussion provided above between the acidifying agents of the Oles process versus the oxygen scavengers or anti-oxidants of the Van Gorp process. The human food preservative of the Oles patent is not necessarily equivalent to the preservative employed in the raw material used to make the animal feed of the Van Gorp patent. The Examiner's characterization of the Oles and Van Gorp preservatives as allegedly being equivalent in function, mechanism, and use is an oversimplification that disregards differences between the acidifying agents of the Oles process versus the oxygen scavengers or anti-oxidants of the Van Gorp process.

As noted, the food compositions obtained by the Ole process are only minimally further processed - homogenization and/or emulsification - after addition of the "synergistic combination of acetic acid or other organic food acid and phosphoric acid. (Col. 5, line 9, through col. 6, line 5, of the Oles patent). On the other hand, the Van Gorp preservative is added to a raw material - mucosa - at a very early stage in advance of further processing, such as heating, and enzymatic hydrolysis. (Col. 4, line 45, through col. 5, line 9 of the Van Gorp patent). These vast differences in the stage at which the oxygen-scavenging stabilizer is incorporated in the Van Gorp process versus when the phosphoric acid is incorporated in the Oles process raise significant questions about the transferability of the phosphoric acid preservation approach to the Van Gorp process. Answers to these transferability questions are not found in either the Van Gorp patent or the Oles patent.

The absence of answers in either the Van Gorp patent or the Oles patent regarding this transferability demonstrates the speculative nature of this transferability issue. In essence, the Examiner's alleged obviousness becomes an "obvious to try" scenario which highlights the lack of motivation to actually make the substitution the Examiner suggests. The Examiner counters with the comment that "obviousness does not require absolute predictability. Rather, the prior art need only provide the artisan of ordinary skill a reasonable expectation of success." However, the Examiner does not produce any evidence or basis supporting such a "reasonable expectation of success."

Instead, the Examiner alleges that the mere disclosure in the Oles patent about the suitability of phosphoric acid as a preservative in completed human foods such as mayonnaise and salad dressings would have let "the artisan of ordinary skill' reasonably expect the Oles phosphoric acid would be useful for preserving the raw materials of the Van Gorp patent, such as "livestock by-products, including gastrointestinal, tracheal or bronchial tissues, or other offal or non-offal tissues." Certainly, one would expect the bacterial and viral contaminant load of raw "livestock by-products, including gastrointestinal, tracheal or bronchial tissues, or other offal or non-offal tissues" to be high, while expecting the bacterial and viral contaminant load in completed human foods such as mayonnaise and salad dressings to be very low. This difference in expected bacterial and viral contaminant loading of the Oles completed human food versus the bacterial and viral contaminant

loading of the Van Gorp raw livestock by-products severely clouds the Examiner's "reasonable expectation of success" and highlights why the viability of transferring the Oles' phosphoric acid preservation approach to the Van Gorp process is speculative, at best, rather than an obvious modification with a reasonable expectation of success as the Examiner alleges.

Claims 21-27 and 53-54 are believed allowable over the Examiner's rejection of claims 21-27 and 53-54 under 35 U.S.C. §103 based upon the Van Gorp patent and the Oles patent. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 21-27 and 53-54 under 35 U.S.C. §103 based upon the Van Gorp patent and the Oles patent and that claims 21-27 and 53-54 be allowed.

Claims 21-27 and 36-52 (In View of the Van Gorp Patent and the Balslev Patent)

We now consider other issues raised by the Examiner's alleged combination of the Van Gorp patent and the Balslev patent, in the context of claims 21-27 and 36-52. It is understood that the Examiner's alleged combination of the Van Gorp patent and the Oles patent is inapplicable to claims 36-52, since the Oles patent does not teach, suggest, or disclose anything about the peroxide-containing compound required by claims 36-52.

The Balslev patent concerns dilute therapeutic compositions that contain a low concentration (1 wt% to 5 wt%) of mucine. (Col. 8, lines 16-23, of the Balslev patent). The dilute therapeutic solutions may be employed in a variety of personal care applications, such as being used as an artificial saliva, as a nasal moisturizer, and as an ophthalmic solution for cleaning contact lenses. (Col. 9, lines 16-18; col. 13, lines 40-60; and col. 14, lines 9-48, of the Balslev patent). The mucine component of the therapeutic composition may be either gastric or salivary mucine. (Col. 5, lines 6-10, of the Balslev patent). The Balslev patent focuses upon gastric mucine derived from a porcine source, where the porcine gastric mucine is a byproduct of pepsin production from hog stomachs. (Col. 8, lines 24-25, of the Balslev patent).

The Balslev patent calls for production of the porcine gastric mucine in a highly purified form that is "substantially free of peptones." (Col. 8, lines 34-36, of the Balslev patent). Preparation of this purified form entails multiple alcohol precipitations employing 60 % alcohol that ultimately yield a porcine gastric mucine solution. (Col. 8, lines 28-31, of the Balslev patent). This

use of multiple ethanol precipitations has the effect of predominantly eliminating bacterial contamination from the porcine gastric mucine solution. Following the last ethanol precipitation step, a low concentration of an oxidizing preservative (such as 0.1 wt% to 0.2 wt% hydrogen peroxide) may be added to the porcine gastric mucine solution prior to drying the porcine gastric mucine solution to yield powdered porcine gastric mucine. (Col. 8, lines 36-48, of the Balslev patent). The added oxidizing preservative reduces the predominantly non-existent bacterial contamination level of the porcine gastric mucine solution still further in the powdered porcine gastric mucine. (Col. 8, lines 48-52, of the Balslev patent). The powdered porcine gastric mucine may then be dissolved in water at dilute concentrations (1 wt% to 5 wt% mucine) to yield the dilute therapeutic compositions. (Col. 8, lines 16-23, and col. 9, lines 16-38, of the Balslev patent). Additionally, a low concentration (0.01 to 70 millimol per liter) of the oxidizing preservative (such as hydrogen peroxide) may be added to the dilute therapeutic compositions. (Col. 6, lines 5-46, of the Balslev patent).

On the other hand, the preservative of the Van Gorp patent is added to a raw material - mucosa - at a very early stage in advance of further processing, such as heating, and enzymatic hydrolysis. (Col. 4, line 45, through col. 5, line 9, of the Van Gorp patent). The Van Gorp patent discloses that the hydrolyzed material may then be incorporated in pig feed. (Col. 8, lines 24-47, of the Van Gorp patent). While the Van Gorp patent briefly mentions use of a preservative that is safe for human consumption and use of food grade enzymes, the only food applications actually disclosed by the Van Gorp patent are the above-noted pig feed applications. Rather than being incorporated in personal care therapeutic solutions like the dilute mucine solutions of the Oles patent, the preservatives of the Van Gorp patent are employed in raw livestock byproducts:

> Typical raw materials envisioned for use in the process are livestock by-products, including gastrointestinal, tracheal or bronchial tissues, or other offal or non-offal tissues. The process water of livestock or meat processing establishments may also serve as a raw material.

(Col. 4, lines 12-16, of the Van Gorp patent). The Van Gorp patent principally focuses on an oxygen-scavenging stabilizer, sodium metabisulfite, as the preserving agent, though the Van Gorp patent also mentions various anti-oxidants (calcium propionate, BHT, and BHA) as examples of the preserving agent. (Col. 4, lines 21-34, of the Van Gorp patent).

> According to the Examiner,
>
> Van Gorp also discloses the preservation of the mucosa starting material using well known preservatives. See col.4, lines 17-34 and 45-50.
>
> . . .
>
> Van Gorp differs from the claims in that Van Gorp does not use the claimed peroxide . . . as a preservative. However, . . . Balslev (see e.g., abstract) make[s] it clear that . . . peroxide . . . [was a] well known . . . [preservative] in food and/or pharmaceutical applications. Thus, the claimed substitution of well known preservatives for those used in Van Gorp must be considered an obvious substitution of one known equivalent preservative for another. That is, because the artisan of ordinary skill at the time of applicant's invention would have had a reasonable expectation from . . . Balslev that . . . peroxide would have functioned equivalently to the preservatives disclosed by Van Gorp, the artisan of ordinary skill would have been motivated to have substituted . . . Balslev's peroxide for the preservatives disclosed by Van Gorp.

This allegation of the Examiner that the Balslev peroxide "would have functioned equivalently to the preservatives disclosed by Van Gorp" and therefore "must be considered an obvious substitution of one known equivalent preservative for another" is without support in the Van Gorp patent and the Balslev patent and is furthermore without support in the preservative art generally.

The Examiner has provided no evidentiary support for his allegation of equivalence, but instead relies purely on conclusory allegations. Indeed, it is well known that most chemical agents have only very specific food preservation actions and functionalities and therefore must be carefully matched to the particular preservation action desired. (Exhibit A to this Amendment After Final). For example, some chemical agents are active only against molds while other chemical agents are active only against yeast and still other agents are active only against certain bacteria. Id. Furthermore, most chemical agents require very specific conditions of pH, moisture, and/or temperature to function effectively as preservatives. Id.

The details provided throughout the Exhibit A reference demonstrate there is no support whatsoever for the Examiner's allegation that the Balslev peroxide "would have functioned equivalently to the preservatives disclosed by Van Gorp" and therefore "must be considered an

obvious substitution of one known equivalent preservative for another." Indeed, the mere fact that the Balslev patent relies on an oxidizer, whereas the Van Gorp patent principally relies on an oxygen-scavenging stabilizer (while also mentioning anti-oxidants), demonstrates the wide difference in operating function between the preservatives of the Van Gorp patent and the preservatives of the Balslev patent. There simply is no reasonable basis for believing that an "artisan of ordinary skill at the time of applicant's invention would have had a reasonable expectation from Balslev that . . . peroxide would have functioned equivalently to the preservatives disclosed by Van Gorp" and would therefore "have been motivated to have substituted . . . Balslev's peroxide for the preservatives disclosed by Van Gorp," despite the Examiner's conclusory allegation to the contrary.

Differences between how the oxidizing agent is incorporated in the Balslev process versus how the oxygen scavengers or anti-oxidants are incorporated in the Van Gorp process demonstrate the Balslev oxidizing agent is not equivalent to Van Gorp oxygen scavengers or anti-oxidants. The Examiner's allegation that a skilled artisan "would have had a reasonable expectation from . . . Balslev that . . . peroxide would have functioned equivalently to the preservatives disclosed by Van Gorp" disregards the differences highlighted in the discussion provided above between the oxidizing agent of the Balslev process versus the oxygen scavengers or anti-oxidants of the Van Gorp process. The oxidizing preservative employed in the personal care therapeutic solution of the Balslev patent is not necessarily equivalent to the preservative employed in the raw material used to make the animal feed of the Van Gorp patent. The Examiner's characterization of the Balslev and Van Gorp preservatives as allegedly being equivalent in function, mechanism, and use is an oversimplification that disregards differences between the oxidizing agent of the Balslev process versus the oxygen scavengers or anti-oxidants of the Van Gorp process.

As noted above, the Balslev process employs the hydrogen peroxide a couple of different ways in the course of preparing the personal care therapeutic solution of the Balslev process. First, a low concentration of an oxidizing preservative (such as 0.1 wt% to 0.2 wt% hydrogen peroxide) may be added to the porcine gastric mucine solution prior to drying the porcine gastric mucine solution to yield powdered porcine gastric mucine. (Col. 8, lines 36-48, of the Balslev patent). In this first use, the hydrogen peroxide is added to the porcine gastric mucine solution that is predominantly free of bacterial contamination as a result of having previously

undergone multiple ethanol (60%) precipitations. Later, after subsequently produced powdered porcine gastric mucine is dissolved in water (at dilute concentrations of 1 wt% to 5 wt% mucine) to yield the personal care therapeutic composition, a low concentration (0.01 to 70 millimol per liter) of the oxidizing preservative (such as hydrogen peroxide) may be added to the personal care therapeutic composition. (Col. 6, lines 5-46, of the Balslev patent). According to the Balslev patent, the personal care therapeutic composition is also predominantly free of bacteria when the second addition of oxidizing preservative occurs to form the completed personal care therapeutic composition.

As noted, the oxidizing agent is added both during manufacture of the personal care therapeutic composition (to maintain the already low bacterial count of the purified mucine solution) and later as the last detail during the manufacture of the personal care therapeutic composition (to maintain the already low bacterial count of the personal care therapeutic composition). (Col. 8, lines 36-48, and col. 6, lines 5-46, of the Balslev patent). On the other hand, the Van Gorp preservative is only added to a raw material - mucosa - at a very early stage in advance of further processing, such as heating, and enzymatic hydrolysis. (Col. 4, line 45, through col. 5, line 9 of the Van Gorp patent). These vast differences in the stage at which the oxygen-scavenging stabilizer is incorporated in the Van Gorp process versus when the oxidizing agent is incorporated in the Balslev process raise significant questions about the transferability of the oxidizing agent approach to the Van Gorp process. Answers to these transferability questions are not found in either the Van Gorp patent or in the Balslev patent.

The absence of answers in either the Van Gorp patent or the Balslev patent regarding this transferability demonstrates the speculative nature of this transferability issue. In essence, the Examiner's alleged obviousness becomes an "obvious to try" scenario which highlights the lack of motivation to actually make the substitution the Examiner suggests. The Examiner counters with the comment that "obviousness does not require absolute predictability. Rather, the prior art need only provide the artisan of ordinary skill a reasonable expectation of success." However, the Examiner does not produce any evidence or basis supporting such a "reasonable expectation of success."

Instead, the Examiner alleges that the mere disclosure in the Balslev patent about the suitability of hydrogen peroxide as a preservative in pharmaceuticals such as the personal care therapeutic composition of the Balslev patent would have let "the artisan of ordinary skill' reasonably expect the Balslev hydrogen peroxide would be useful for preserving the raw materials of the Van Gorp patent, such as "livestock by-products, including gastrointestinal, tracheal or bronchial tissues, or other offal or non-offal tissues." Certainly, one would expect the bacterial contaminant load of raw "livestock by-products, including gastrointestinal, tracheal or bronchial tissues, or other offal or non-offal tissues" to be high, while understanding from the Balslev patent that the bacterial contaminant load prior to both additions of the hydrogen peroxide would be very low. This difference in expected bacterial loading at the time of incorporating hydrogen peroxide in the Balslev process versus the high bacterial contaminant loading of the Van Gorp raw livestock by-products severely clouds the Examiner's "reasonable expectation of success" and highlights why substitution of the Balslev hydrogen peroxide preservation approach into the Van Gorp process is speculative, at best, rather than an obvious modification with a reasonable expectation of success as the Examiner alleges.

Claims 21-27 and 36-52 are believed allowable over the Examiner's rejection of claims 21-27 and 36-52 under 35 U.S.C. §103 based upon the Van Gorp patent and the Balslev patent. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 21-27 and 36-52 under 35 U.S.C. §103 based upon the Van Gorp patent and the Balslev patent and that claims 21-27 and 36-52 be allowed.

Prior Argument Versus the Examiner's Rejection of Claims 21-27
(In View of the Van Gorp Patent, the Balslev Patent, and the Oles Patent)

Applicants incorporate herein by reference the arguments provided in the previous Amendment filed on April 11, 2002 versus the Examiner's prior rejections of claims 21-27, to the extent these prior arguments pertain to the Examiner's present rejections of claims 21-27 and 36-54 under 35 U.S.C. §103 based upon the Van Gorp patent, the Balslev patent, and the Oles patent. Furthermore, with regard to the Examiner's current responsive argument:

> Moreover, given the fact that it will decompose during storage, the artisan of ordinary skill in the art would not expect the amount of peroxide remaining after storage to affect the mucosa-hydrolyzing enzymes used in Van Gorp, contrary to applicant's argument.

In this regard, Applicants note the Balslev patent teaches that even after a storage period of a few weeks, the hydrogen peroxide concentration when used for sterilizing the small remaining bacteria count only drops by about 50%. (Col. 6, lines 54-57, of the Balslev patent.) Applicants further note that there is no storage period disclosed for the raw livestock byproducts in the Van Gorp patent. Without knowing whether the storage period for the raw livestock byproducts in the Van Gorp patent, while knowing the rate of hydrogen peroxide decomposition is at least time-dependent, it is impossible for the Examiner to factually conclude that "the artisan of ordinary skill in the art would not expect the amount of peroxide remaining after storage to affect the mucosa-hydrolyzing enzymes used in Van Gorp."

Next, with regard to the Examiner's comments regarding the failure of the Van Gorp patent to employ the hydrogen peroxide of the predecessor Balslev patent or the phosphoric acid of the predecessor Oles patent, Applicants maintain the position that this failure does indeed amount to evidence contradicting the Examiner's obviousness allegations and does indeed amount to evidence that the Van Gorp patent teaches away from the present invention, as defined in claims 21-27 and 36-54. This evidence, combined with other evidence of non-obviousness discussed herein, tends to tilt the balance against the Examiner's suggestion that the invention defined in claims 21-27 and 36-54 would have been obvious in view of the Van Gorp patent, the Oles patent and the Balslev patents. Furthermore, the Examiner's comments notwithstanding, Applicants' approach to characterizing the failure of the Van Gorp patent in this way would not "mean that no prior art disclosures could ever be combined" in the course of making an obviousness rejection.

Next, Applicants note the Examiner's allegation that the hydrogen peroxide concentration drops to "zero" in the Balslev patent is erroneous. Instead, the Balslev patent discloses that the concentration of hydrogen peroxide drops to "only slightly above zero," but only after a storage period of one year. (Col. 6, lines 54-59, of the Balslev patent). In the case of ozone use, the Balslev patent discloses a concentration drop to "close to zero in a few hours." (Col. 6, lines 59-61, of the Balslev patent). Finally, Applicants assert the Examiner's suggested combination of the

Balslev, Oles, and Van Gorp details to arrive at the present invention, as defined by claims 21-27 and 36-54 is clearly the result of improper hindsight reconstruction that impermissibly employs details of claims 21-27 and 36-54 as the road map. Such hindsight reconstruction is the only rational supporting the Examiner's suggested combinations, considering the abundant evidence Applicants have addressed herein regarding the lack of suggestion and motivation to combine the references as the Examiner alleges.

Independent claims 21, 36, and 53 are believed allowable. Likewise, claims 22-27, 37-52, and 54 are also believed allowable, since claims 22-27 each depend from allowable claim 21, claims 37-52 depend from allowable claim 36, and claim 54 depends from allowable claim 54. Therefore, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 21-27 and 36-54 under 35 U.S.C. §103 based upon the Van Gorp, Balslev, and Oles patents and that claims 21-27 and 36-54 be allowed.

CONCLUSION

Claims 21-27 and 36-54 are believed allowable. Therefore, Applicants respectfully request that the Examiner reconsider and allow claims 21-27 and 36-54. The Examiner is invited to contact Applicants' below-named attorney to discuss any aspect of this application and advance this application to allowance.

Respectfully submitted,

KINNEY & LANGE, P.A.

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APPENDIX:
MARKED UP VERSION OF CLAIM AMENDMENTS

Claim 42 is amended as follows:

42. (Amended) The [improvement] method of claim 36, the method further comprising mixing the peroxide-containing compound and the mucosa tissue to form a mucosa product, the concentration of the peroxide-containing compound remaining in the mucosa product being undetectable when the concentration of the peroxide-containing compound remaining in the mucosa product is determined using $KMnO_4$ titration.